State Of California The Resources Agency of California

Memorandum

Date: September 2, 2003
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File:

To: Integrated Energy Policy Report Committee:
Commissioner James D. Boyd, Presiding Member
Chairman William J. Keese

From: California Energy Commission
1516 Ninth Street
Sacramento, CA 95814-5512

Subject: **Background information and staff recommendation on power plant water use**

The Integrated Energy Policy Report Committee posted a series of questions before the August 26 and 27 hearing on the Electricity and Natural Gas Analysis Report. Commission staff has prepared the following background information in response to the following questions:

18. Do existing laws, regulations, and policies provide a basis for the Commission to require any power plant applicant to agree to use dry cooling or recycled water rather than fresh water unless that applicant can demonstrate to the Commission's satisfaction that neither option is practicable in its particular case?

19. Do existing laws, regulations, and policies provide a basis for the Commission to require any power plant applicant to agree to use zero liquid discharge unless that applicant can demonstrate to the Commission's satisfaction that the option is not practicable in its particular case?

Staff has included a summary and recommendation for how the Energy Commission should implement existing state water policy in the power plant certification cases it considers. This recommendation is based, in large part, on staff's experience and recommendations on individual power plant siting cases recently before the Energy Commission.

Staff offers this information and recommendation for the Committee's consideration in preparing the Integrated Energy Policy Report. Other parties that wish to comment can file their comments in the IEPR proceeding docket (02-IEP-1) or provide comments on the draft IEPR after it is published in mid-September.

Sincerely,

/s/

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DOCKET NO. 02-IEP-1

STAFF COMMENTS

State Water Policy
Background and Recommendation for Implementation

September 2, 2003

I. Introduction

In Chapter 3 on "Environmental Performance: Water Resources," the first major point emphasized in the 2003 Environmental Performance Report is that fresh water is a limited resource in the state and competing demands for fresh water are forecasted to exceed the state's supply. Water conservation is, therefore, of paramount importance to the state. Indeed, conserving fresh water and avoiding its wasteful use have long been part of the state's water policy, as reflected in the State Constitution, Article X, Section 2. Because powerplants have the potential to use substantial amounts of water for evaporative cooling, the Commission has the opportunity and the responsibility to apply state water policy to minimize the use of fresh water and promote alternative cooling technologies.

II. Factual Background

California's burgeoning population, expected to grow from 35.5 million in 2003 to 47.5 million in 2020, combined with businesses and industry, will continue to use increasing quantities of fresh water at rates that cannot be sustained. Imbalances in available fresh water supply results in "average year" shortages projected in every region except parts of the San Francisco Bay area and the North Coast (DWR, 1998).

Most of the state's surface water supplies currently experience both average year and drought year shortages. Due to rising demand, these shortages are expected to steadily increase. In addition, ground water supplies are a limited and over-drafted resource in many parts of the state. By 2020, the average year shortage is expected to be 2.4 million acre feet (MAF) per year. Dry year shortages can increase this figure several more MAF per year.

In the California Colorado River Water Use Plan, California is limited to using 4.4 MAF per year from the Colorado River, but has been using in excess of that, up to 5.4 MAF. Because California missed the December 31, 2002 deadline to adopt a plan to reduce California's use, the federal government immediately disallowed any excess use by the state above 4.4 MAF at the beginning of 2003. Federal, state, and local agencies are continuing to work to finalize a plan that would allow the state's reduction to be phased in over a 15-year period and stay within the state's allotment. This, nevertheless, puts additional pressure upon in-state fresh water sources.

Programs under CALFED and the Central Valley Improvement Act have provided significant improvement in environmental protection and water quality and in restoring aquatic habitat for endangered species. However, this results in more water being used for environmental needs and less water available for consumptive needs.

Water conservation through recycling and use of alternative technologies to eliminate or reduce using fresh water wherever possible will have increasing importance in enabling the state to meet future water demands. Long-term commitment to using fresh water for cooling needs at industrial facilities, such as power plants, does not make sense in light of increasing fresh water shortages throughout most of California and the availability of alternatives to such use.

III. Constitutional and Legislative Background

Given the growing demands on the state's limited water supply and the state's water policy as articulated in the State Constitution, the Legislature has adopted statutory provisions that reiterate the need for conservation and promote the use of recycled water. Water Code section 461, for example, states, "It is hereby declared that the primary interest of the people of the state in the conservation of all available water resources requires the maximum reuse of reclaimed water in the satisfaction of requirements for beneficial uses of water." (Water Code § 461.)

In further promotion of recycled water, Water Code section 13512 states, "It is the intention of the Legislature that the state undertake all possible steps to encourage development of water recycling facilities so that recycled water may be made available to help meet the growing water requirements of the state." (Water Code § 13512.)

More broadly, Water Code section 78500.2 states in pertinent part:

> It is of paramount importance that the limited water resources of the state be … conserved and recycled whenever economically, environmentally, and technically feasible. The state should plan to meet the water supply needs of all beneficial uses of water … utilizing a wide range of strategies including water conservation and recycling … to meet the growing water needs of the state.

(Water Code § 78500.2(c) and (d).)

With respect to industrial uses of water, Water Code section 13550 states:

> The Legislature hereby finds and declares that the use of potable domestic water for nonpotable uses, including, but not limited to, … industrial … uses, is a waste or an unreasonable use of the water within the meaning of Section 2 of Article X of the California Constitution if recycled water is available which meets all of the following conditions, as determined by the state board ….

(Water Code § 13550(a).) The section goes on to describe several criteria for determining whether recycled water is "available" for use. Although the section refers to the State Water Resources Control Board for determining whether recycled water is "available," the criteria described in section 13550 could serve as guidance to the Energy Commission in determining whether recycled water is "available" for powerplants under the Energy Commission's exclusive siting jurisdiction.

Of particular relevance to powerplant cooling, Water Code section 13552.6 goes on to state, "The Legislature hereby finds and declares that the use of potable domestic water for … cooling towers … is a waste or an unreasonable use of water within the meaning of Section 2 of Article X of the California Constitution if recycled water, for these uses, is available to the user, and the water meets the requirements set forth in Section 13550, as determined by the state board after notice and a hearing." (Water Code § 13352.6.) This section provides an explicit example of the state's policy against the use of potable water for industrial uses where recycled water is shown to be available.

Water Code section 13577, which is part of the Water Recycling Act of 1991 (Water Code § 13575 et seq.), actually establishes a "statewide goal to recycle a total of … 1,000,000 acre-feet of water per year by the year 2010." (Water Code § 13577.) The fact that the state has established such a statewide goal should give state agencies further reason to use their authority where opportunities arise to promote the use of recycled water.

Finally, in addition to enacting statutory provisions that articulate and implement the state's water policy as first stated in the State Constitution, the Legislature has directed state agencies to carry out their activities in a manner that meets the water quality objectives of the State Board. Specifically, the Legislature directs that "[s]tate offices, departments and boards, in carrying out activities which affect water quality, shall comply with state policy for water quality control unless otherwise directed or authorized by statute …." (Water Code § 13146.) Thus, state agencies have a statutory duty to plan and carry out their activities in accordance with the policies and principles adopted by the State Board.

IV. State Water Policy for Powerplant Cooling and Discharges

Perhaps the most pertinent statement of state water policy regarding powerplants is Resolution 75-58 adopted by the State Water Resources Control Board.[1] With respect to using fresh water, the Resolution articulates an underlying policy "to protect beneficial uses of the State's water resources and to keep the consumptive use of freshwater for powerplant cooling to that minimally essential for the welfare of the citizens of the

[1] Adopted in 1975, the Resolution is outdated in part in that it promotes once-through cooling with ocean water without regard to impacts to aquatic resources. Aquatic biological data collected in the last 28 years show that the biological harm caused by using ocean water for once-through cooling is likely to be substantial. In this regard, data collected since the adoption of Resolution 75-58 should be used to inform the Board in any decision on updating the Resolution.

State." (Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Powerplant Cooling," June 19, 1975, mimeo, p. 1, hereafter referred to as "Water Policy for Powerplant Cooling.") The policy reflects the state's concerns over discharges from powerplant cooling, as well as the conservation of fresh water for cooling purposes. Although the Resolution is explicitly directed at the state's Regional Water Quality Control Boards, it nevertheless establishes state policy directed specifically at powerplant cooling and discharges to state waters. In that regard, the Resolution provides guidance that the Energy Commission in licensing powerplants can use.

Specifically, the State Board states that it "encourages … power generating utilities and agencies to study the feasibility of using wastewater for powerplant cooling" and "encourages the use of wastewater for powerplant cooling where it is appropriate." (Water Policy for Powerplant Cooling, p. 5.) The Board also lists specific "discharge prohibitions" to limit the discharge of blowdown and waste waters from cooling facilities so as to "maintain existing water quality and aquatic environment of the State's water resources." (Water Policy for Powerplant Cooling, p. 5.) Although the Board does not refer to zero-liquid discharge (ZLD) as a method of eliminating discharges into the state's waters altogether, (ZLD) has become a frequently used method to eliminate powerplant cooling discharges, as well as reduce the amount of water needed for cooling. The promotion of ZLD would, therefore, be a way to implement the state's water policy as enunciated in Resolution 75-58.

Of particular note, the Board states as a matter of principle, "Where the Board has jurisdiction, use of fresh inland waters for powerplant cooling will be approved by the Board only when it is demonstrated that the use of other water supply sources or other methods of cooling would be environmentally undesirable or economically unsound." (Water Policy for Powerplant Cooling, p. 4.) Left unclear is whether and, if so, how the principle extends to powerplant proposals under the jurisdiction of the Energy Commission.

The IEPR presents a timely opportunity for the Energy Commission to enunciate its position that the same principle as adopted in Resolution 75-58 applies to powerplant proposals under the Energy Commission's jurisdiction and that the principle applies as a matter of established state water policy. Indeed, the Warren-Alquist Act, itself, reiterates state water policy in terms of conserving water and using alternative sources of water supply. Public Resources Code section 25008 states, "It is further the policy of the state and the intent of the Legislature to promote all feasible means of energy and water conservation and all feasible uses of alternative energy and water supply sources." (Pub. Resources Code § 25008; emphasis added.)[2]

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[2] In addition, Public Resources Code section 25602 directs the Commission to undertake research in various areas to influence and inform development priorities. Section 25602 states in pertinent part, "The commission shall carry out technical assessment studies on all forms of energy and energy-related problems … including, in addition to those problems specified in Section 25601, but not limited to, the following:

…

(d) Expanded use of wastewater as cooling water and other advances in powerplant cooling."

V. Recommendation

In sum, the Energy Commission should use the IEPR as an opportunity to enunciate a clear position on how state water policy applies to the Energy Commission's powerplant cases. Specifically, the Energy Commission should extend to cases under the Commission's jurisdiction the principle enunciated by the State Water Board regarding the use of fresh water only where alternative water supply sources and alternative cooling technologies are shown to be "environmentally undesirable" or "economically unsound." Additionally, as a way to reduce the use of fresh water and to avoid discharges in keeping with the Board's policy, the Energy Commission should promote zero-liquid discharge (ZLD) technologies unless ZLD technologies are shown to be "environmentally undesirable" or "economically unsound". To clarify the principle as it applies to cases before the Energy Commission, the Commission could interpret "environmentally undesirable" to mean the same as having a "significant adverse environmental impact" and "economically unsound" to mean the same as "economically or otherwise infeasible."[3]

In effect, the Energy Commission would be implementing the state's water policy by approving the use of fresh water for powerplant cooling only if the use of alternative water supply sources or alternative cooling methods would cause a significant adverse environmental impact or are economically or otherwise infeasible. If an applicant proposes to use fresh water for cooling, the applicant would have the burden of justifying the use of fresh water by demonstrating with substantial evidence that alternative water sources and alternative cooling methods either cause a significant adverse environmental impact or are economically or otherwise infeasible. In furtherance of state water policy, the Energy Commission would also expect an applicant to use ZLD technology to eliminate discharge wastewater from the proposed site unless the applicant demonstrates that ZLD technologies would cause a significant adverse environmental impact or are economically or otherwise infeasible.

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[3] "Feasible" is defined under the California Environmental Quality Act as meaning "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social and technological factors." (Cal. Code Regs., tit. 14, § 15365.) The same definition exists in the Energy Commission's siting regulations. (See, Cal. Code Regs., tit. 20, § 1702(e).)